

SESSION 2

THE RESOURCE CONSERVATION AND RECOVERY ACT:

RCRA-REGULATED WASTES

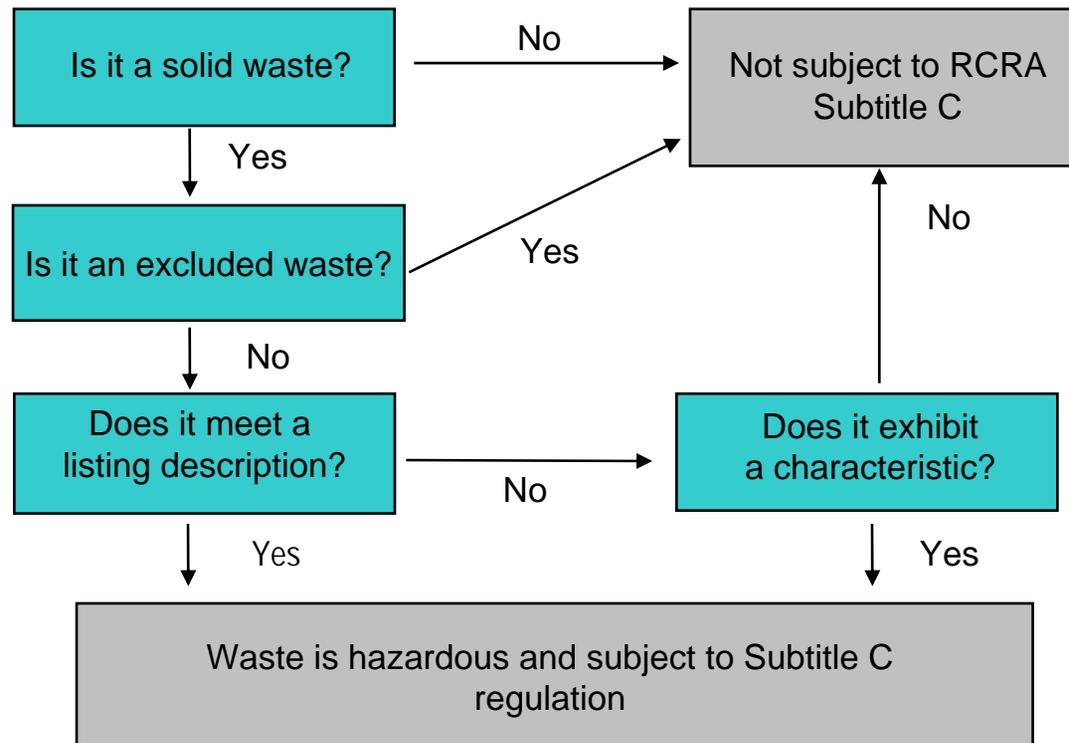


Session 2 Agenda: RCRA-Regulated Wastes

- ▶ Hazardous Waste Identification Process
- ▶ Definition of Solid Waste
- ▶ Definition of Hazardous Waste
- ▶ Hazardous Waste Recycling
- ▶ Used Oil
- ▶ Universal Waste
- ▶ Exclusions
- ▶ Review



A generator must determine if its waste is hazardous at the point of generation



First, a generator must determine if the material is a solid waste

- ▶ A solid waste is any solid, liquid, or contained gaseous material that is being *discarded*

- ▶ A *discarded material* is any material that is:
 - Abandoned
 - Inherently waste-like
 - Recycled
 - Military munitions identified in §266.202



Definition of Solid Waste

A discarded material is any material that is *abandoned* by being:

- ▶ Disposed of
- ▶ Burned or incinerated
- ▶ Accumulated, stored, or treated in lieu of being disposed of, burned, or incinerated



A discarded material is any material that is considered *inherently waste-like*

- ▶ Inherently waste-like materials include:
 - Dioxin-containing waste codes (F020, F021, F022, F023, F026, and F028)
 - Secondary materials fed to a halogen acid furnace

- ▶ These materials are solid wastes even when they are recycled in any manner



Dioxin itself is not a hazardous waste, but there are listings and characteristics for dioxin-containing wastes

Definition of Solid Waste

A discarded material is any material that is *recycled* by being:

- ▶ Applied to or placed on the land in a manner that constitutes disposal, or
- ▶ Burned for energy recovery, or
- ▶ Reclaimed, or
- ▶ Accumulated speculatively



There is a common misconception that recycling exempts you from RCRA; EPA does regulate some materials when recycled (e.g., spent materials)

Definition of Solid Waste

A discarded material is any material that is a *military munition* identified in §266.202 as a solid waste when:

- ▶ Disposed of, burned, or incinerated
- ▶ Removed from storage for disposal
- ▶ Leaking, deteriorated, or damaged
- ▶ Determined to be solid waste by a military official
- ▶ Collected from a range and sent off site for treatment or disposal



Discharge of ammunition is normal and expected use, not hazardous waste disposal



A waste is considered hazardous if it meets a listing description or exhibits a characteristic

- ▶ Hazardous waste listings:
 - Tied to specific industries or descriptions
 - Commonly referred to as F, K, P, and U lists
 - Waste either meets the listing description or it does not
- ▶ Hazardous waste characteristics:
 - Based on the property of wastestream
 - Not tied to specific industry or process
 - Ignitability, corrosivity, reactivity, toxicity
 - Commonly referred to as D codes (D001-D043)

F, K, P, and U codes from the listed wastes do not define broader regulatory terms



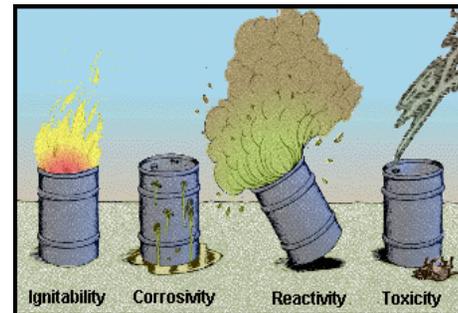
If a solid waste meets a listing description, it is a listed hazardous waste

- ▶ There are four separate lists of hazardous waste
 - Manufacturing process wastes: F-list, K-list
 - Unused commercial chemical products: P-list, U-list
- ▶ Generators must look at each list and compare their wastes to the narrative descriptions to determine whether or not they have a listed waste



If a solid waste is not listed, it may be a hazardous waste by exhibiting a characteristic

- ▶ Characteristic wastes capture measurable properties that indicate a waste poses enough of a threat to deserve regulation as a hazardous waste
- ▶ Even if a waste meets a listing description, the generator must determine if it also exhibits a characteristic
- ▶ There are four classifications of characteristic hazardous waste
 - Ignitability (D001)
 - Corrosivity (D002)
 - Reactivity (D003)
 - Toxicity (D004-D043)

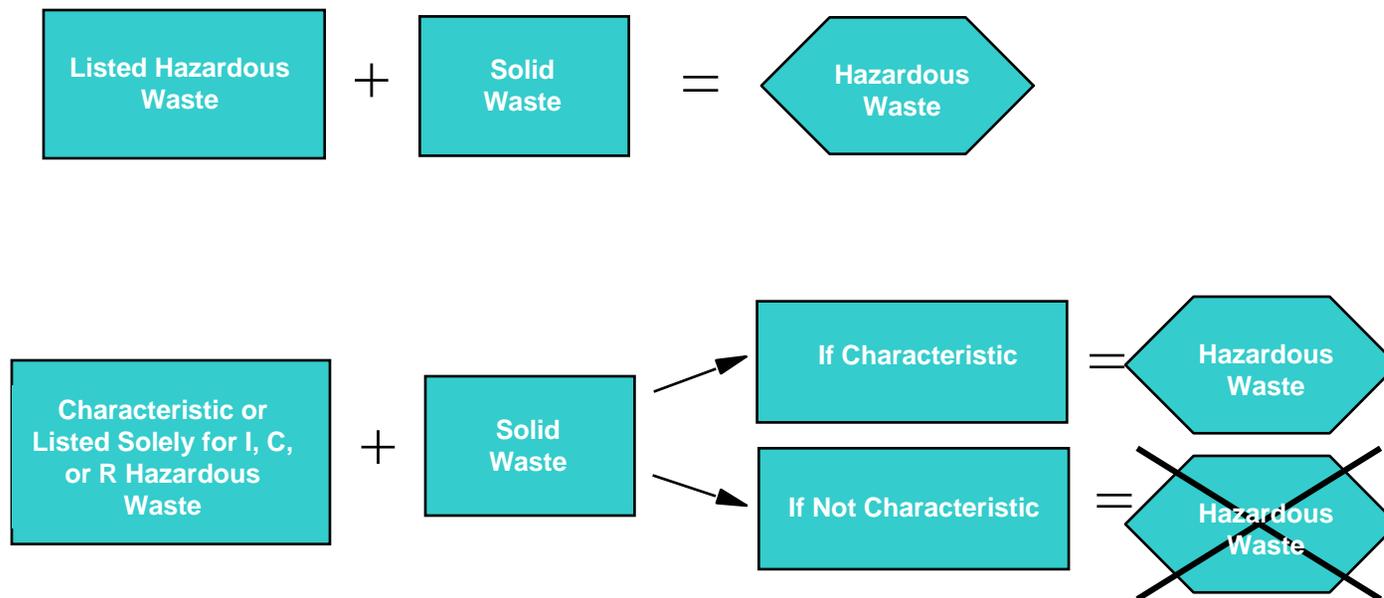


Special regulatory conventions apply to the handling of hazardous waste after generation

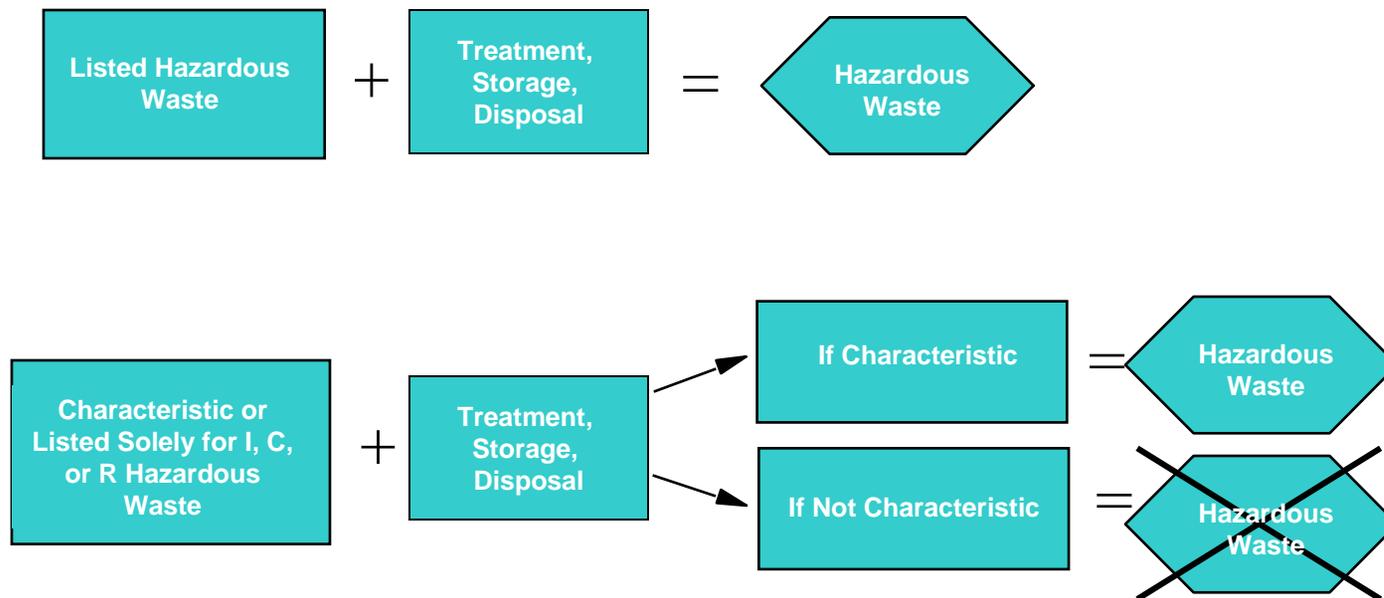
- ▶ The **mixture rule** governs mixtures of hazardous waste with nonhazardous waste
- ▶ The **derived-from rule** governs residues resulting from treatment, storage, and disposal of hazardous waste



The mixture rule governs mixtures of hazardous waste with nonhazardous waste



The derived-from rule governs residues resulting from treatment, storage, and disposal of hazardous waste



EPA regulates environmental media via the contained-in policy

- ▶ Environmental media (e.g., soil, groundwater) that contain hazardous waste must be managed as hazardous waste until they no longer contain the waste
 - Media do not contain a characteristic waste when they no longer exhibit a characteristic
 - Media do not contain a waste listed for a characteristic when they no longer exhibit a characteristic
 - Determination that media no longer contain a listed waste is made by implementing agency

- ▶ Policy is not codified in the regulations



Hazardous wastes being recycled may be subject to the RCRA hazardous waste standards

- ▶ Regulation is dependent on type of secondary material and how it is being recycled
- ▶ Types of **secondary materials** include: spent materials, sludge, by-products, and commercial chemical products
- ▶ Types of **recycling** include: use constituting disposal, burning for energy recovery, reclamation, and direct reuse
- ▶ EPA has established guidelines to determine if a material is being legitimately recycled—to avoid *sham recycling*



Table 1 in Part 261 illustrates solid waste determinations for materials that are recycled

	Use Constituting Disposal	Energy Recovery/ Fuel	Reclamation	Direct Use/Reuse
Spent Materials	Solid Waste	Solid Waste	Solid Waste	Not Solid Waste
Listed Sludge	Solid Waste	Solid Waste	Solid Waste	Not Solid Waste
Characteristic Sludge	Solid Waste	Solid Waste	Not Solid Waste	Not Solid Waste
Listed By-products	Solid Waste	Solid Waste	Solid Waste	Not Solid Waste
Characteristic By-products	Solid Waste	Solid Waste	Not Solid Waste	Not Solid Waste
Commercial Chemical Products	Solid Waste	Solid Waste	Not Solid Waste	Not Solid Waste



Several wastes have special management standards when recycled

- ▶ Spent lead-acid batteries being reclaimed
- ▶ Precious metals recovery
- ▶ Reclaimed industrial ethyl alcohol
- ▶ Scrap metal reclamation
- ▶ Waste-derived fuels from petroleum refineries



Gold, silver, platinum, paladium, irridium, osmium, rhodium, and ruthenium are all considered precious metals



Used oil is subject to special standards in Part 279 regardless of whether or not it is hazardous

- ▶ “Any oil that has been refined from crude oil, or any synthetic oil, that has been used and as a result of such use is contaminated by physical or chemical impurities”
- ▶ Is easily recyclable and a valuable resource, but there is a great potential for mismanagement
- ▶ Used oil program presumes that oil will be *recycled*, thus not subject to RCRA Subtitle C unless exhibits a characteristic and sent for disposal



An estimated 380 million gallons of used oil are recycled each year

The used oil regulated community consists of:

- ▶ Generators (Subpart C)
- ▶ Collection centers & aggregation points (Subpart D)
- ▶ Transporters & transfer facilities (Subpart E)
- ▶ Processors & re-refiners (Subpart F)
- ▶ Burners (Subpart G)
- ▶ Marketers (Subpart I)



About 15% of used oil generated in the United States comes from household do-it-yourself generators



Part 273 contains special standards for universal waste to encourage recycling

- ▶ EPA promulgated federal standards for four types of universal waste:

- Hazardous waste batteries
- Hazardous waste pesticides
- Hazardous waste thermostats
- Hazardous waste lamps



- ▶ EPA is proposing to add mercury-containing equipment (67 FR 40508; June 12, 2002)

- ▶ Authorized states can add additional wastes to their state universal waste programs

Universal waste lamps are typically hazardous because of mercury or lead contained within the bulbs

There are three main players in the universal waste regulated community

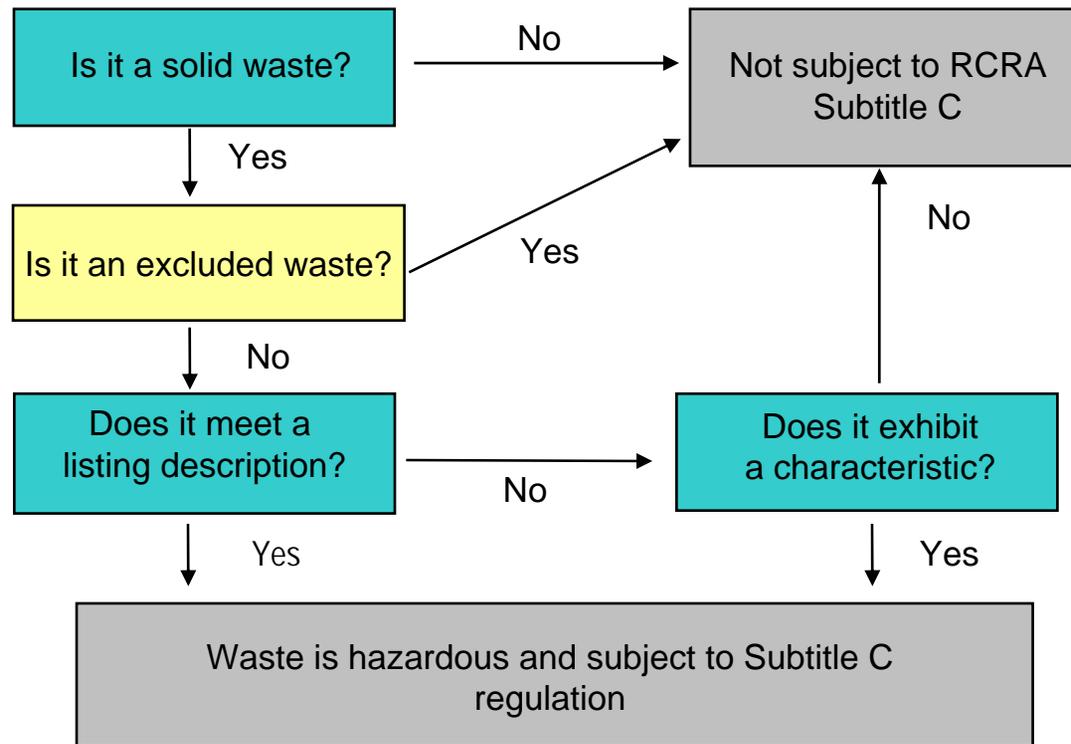
- ▶ Small and large quantity handlers (Subparts B and C)
- ▶ Transporters (Subpart D)
- ▶ Destination facilities (Subpart E)
 - A facility that treats, stores, disposes, or recycles universal waste
 - Subject to all applicable RCRA Subtitle C requirements



These regulations save companies more than \$70 million per year in compliance costs

Exclusions

A generator must determine if the waste is excluded per §261.4



Exclusions

Subtitle C exclusions remove specific materials from regulation as solid or hazardous waste

- ▶ Avoids dual regulation
- ▶ Reduces economic impacts
- ▶ Encourages recycling & the use of new technologies
- ▶ Eases industry regulation



Many exclusions are mandated directly in RCRA

Exclusions

EPA excludes certain waste material to avoid dual regulation

- ▶ Domestic sewage
- ▶ Point source discharge
- ▶ Contaminated dredged sediments
- ▶ Radioactive materials (however, RCRA regulates mixed waste)



These exclusions are regulated under other programs such as the Clean Air Act or Clean Water Act

Exclusions

Some exclusions were clearly identified by Congress in RCRA legislative history

- ▶ *Household hazardous waste*—may meet a listing or hazardous waste characteristic, but is generated by a household
- ▶ *Agricultural or animal waste that is returned to the soil as fertilizer*—it is common for farmers to use animal waste to condition the soil in fields
- ▶ *Mining overburden*



American households generate 1.6 million tons of hazardous waste per year

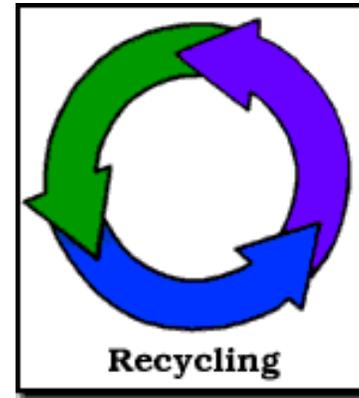
40 CFR §261.4



Exclusions

Some exclusions encourage recycling

- ▶ Spent chemical solutions
- ▶ Closed-loop recycling
- ▶ Scrap metal
- ▶ Shredded circuit boards
- ▶ Oil-bearing hazardous secondary materials
- ▶ Recovered oil
- ▶ Chlorofluorocarbon (CFC) refrigerants



Exclusions

Some exclusions ease regulations on specific industries

- ▶ Fossil fuel combustion
- ▶ Oil and gas exploration and production
- ▶ Mining and mineral processing
- ▶ Petroleum refining
- ▶ Cement kiln dust



There are many steps in the hazardous waste identification process

- ▶ First must determine if a material is a solid waste
- ▶ A waste is hazardous if it meets a listing description or exhibits a characteristic
- ▶ Several wastes have special management standards when recycled
- ▶ Used oil and universal waste programs encourage recycling
- ▶ Subtitle C exclusions remove specific materials from regulation as solid or hazardous waste

